Amendments to Specification

Please replac paragraph starting on pag 3, line 1:

Figure 1A-B depicts the amino acid sequence alignment between the N-Acetylglutamate Kinase from *Synechocystis sp.* (NCBI General Identifier No. 1652434; SEQ ID NO:11), the instant corn contig assembled of clones cr1n.pk0113.g3 and p0111.cipmf81r (SEQ ID NO:2), the instant rice clone rls72.pk0023.c6 (SEQ ID NO:4), the instant soybean clone sdp2c.pk010.h6 (SEQ ID NO:6) and the instant wheat contig assembled of clones wlk1.pk0019.d6 and wl1.pk0009.a7. The top row indicates with asterisks (*) the amino acids conserved among all sequences and with plus signs (+) the amino acids conserved only among the plant sequences. Dashes are used by the program to maximize the alignment of the sequences. The bottom row contains the consensus sequence (SEQ ID NO:12) comprising all the amino acids which are conserved among all plant sequences.

Please replace Table 5, starting on page 18, line 19:

TABLE 5

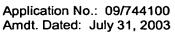Amino Acid Variability Among Plant N-Acetylglutamate Kinase

Amino Acid Position in Consensus Sequence	Possible Amino Acids
2	Leu, Met
3	Leu, Ala
4, 178~~176~~	Thr, Ala, Gly
5	Lys, none
6~~5~~	Pro, none
7~~6~~	~~Trp~~Tyr, His, none
8~~7~~	Leu, none
9, 478~~,46~~	Ser, Ala, none
10	Asn, Ser, Ala, none
~~10~~11	Ser, Lys, Pro
~~11~~12	~~Lys~~Leu, Ser, Thr, Ala

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Amino Acid Position in Consensus Sequence	Possible Amino Acids
~~12~~13	Leu, Phe
~~13~~14	Pro, Thr, none
~~14~~15	Val, Leu, Asn
~~15~~16	Pro, Leu
16, ~~182~~17, 184	Ser, Cys
~~17, 36~~18, 37	Pro, Thr, Ala
~~18~~19	Pro, Arg, Ser
~~19~~20	Pro, Val, Phe, Leu
~~20, 30~~31	Ser, Lys, Thr, Arg
~~21~~22	Gly, Phe, Asn, Ser
~~23, 50~~24, 51	Thr, Ala, Asn
~~24~~25	Leu, Pro, Lys
~~25~~26	Ser, Gly, Pro, Lys
~~26~~27	Ser, Pro, Gln, Ala
~~27~~28	Asn, Ala
~~28~~29	His, Gln, Arg
~~29~~30	Ala, Leu, Val
~~31~~32	Pro, Thr
~~32~~33	Leu, Ile, Ser
~~33~~34	Ala, His
~~34, 49, 51, 52, 74, 194, 252, 265, 309~~ 35, 50, 52, 53, 75, 196, 254, 267, 311	Ala, Ser
~~35~~36	Pro, Ser, Phe
~~37~~38	Cys, Ala, Ser, Pro
~~38~~39	Arg, Pro, Thr, His
~~39~~40	Arg, Gly, none
40, ~~43~~41, 44	Arg, Leu
~~41~~42	Ser, Arg
~~42~~43	Arg, Cys, His, Gly
~~44~~45	Arg, Ala
45, ~~253~~46, 255	Ile, Leu, Val
~~47~~48	Ala, Val, none
~~48~~49	Thr, Val, none
~~53~~54	Pro, Gln, Ser
54, ~~57~~55, 58	Ser, Ala, Pro

Amino Acid Position in Consensus Sequence	Possible Amino Acids
5556	Pro, Ala, Leu
5657	Ser, Leu, Ala
5960	Ala, Glu, Gln
60, 227, 42861, 229, 340	Ala, Thr
6263	Thr, Ser, none
63, 191, 197, 269, 29164, 193, 199, 271, 293	Glu, Ala
6465	Ala, Ser, Gly
6566	Leu, Gln
6667	Ser, Tyr, Asn
80, 8281, 83	Arg, Lys
86, 137, 154, 179, 226, 28187, 138, 156, 181, 228, 283	Val, Ile
106107	Arg, Asn
117, 215, 308118, 217, 310	Arg, His
133134	Leu, Gly, Gln
135, 209136, 170	Val, LysLeu
136137	Gly, Asn
138139	Glu, Pro
139141	Gln, Val
142, 210, 272144, 212, 274	Asp, Asn
150152	Leu, Asp
151, 190153, 192	Thr, Asn
156158	Glu, Ser
161, 201163, 203	Gly, Arg
166168	Asn, Glu, Thr, Gln
172174	Asn, Lys, Arg
173175	Ile, Leu, Lys, Pro
174, 211, 237140, 176, 213, 239	Ala, Pro
177, 228, 234179, 230, 236	Thr, Ser
180, 221182, 223	Gly, Ser
183185	Gly, Trp, Arg
184186	Lys, Met
185, 292187, 294	Asp, Glu
186, 230, 296188, 232, 298	Gly, Ala

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Amino Acid Position in Consensus Sequence	Possible Amino Acids
~~189, 217, 249, 259, 261~~ 191, 219, 251,261, 263	Ile, Leu
~~196~~198	Asn, Lys, Asp
~~198, 284~~200, 286	Lys, Ala
~~199~~201	Ala, Gly, Asp
~~202~~204	Phe, Tyr
~~205~~207	Glu, Gly
~~207~~209	Ser, Trp, Ala, Thr
211	Val, Lys
~~212, 220~~214, 222	Thr, Ala, Ser
~~216~~21, 218	Pro, Ser
~~219~~221	Ala, Asp
~~245~~247	Ala, Val
~~275~~277	Gly, Asp
~~280~~282	Val, Glu, Lys
~~288~~290	Lys, Gln, Arg
~~290~~292	Val, Met
~~294~~296	Lys, Gln
~~304~~306	Glu, Asn, Gly
~~405~~317	His, Ile

Please replace Figure 1 with the enclosed Figure 1A-B.

Amended Claims
Please replace the Claims with th currently amended set:

Claim s 1-5 (currently canceled)

Claim 6.(currently amended) An isolated ~~nucleic acid fragment~~polynucleotide comprising:

(a)a nucleotide sequence encoding a N-acetylglutamate kinase, wherein the polypeptide has an amino acid sequence of at least 95% sequence identity, based on the Clustal V method of alignment, when compared to~~having~~ the sequence set forth in SEQ ID NO:12, where:

Xaa at position 2 is Leu or Met,

Xaa at position 3 is Leu or Ala,

Xaa at position 4 or ~~176~~178 is Thr, Ala or Gly,

Xaa at position 5 is Lys or none,

Xaa at position 6~~5~~ is Pro or none,

Xaa at position 7~~6~~ is Tyr~~Trp~~, His or none,

Xaa at position 8~~7~~ is Leu or none,

Xaa at position 8,~~9,~~ or 46~~47~~ is Ser, Ala or none,

Xaa at position 10 is Asn, Ser, Ala, or none,

Xaa at position 11~~10~~ is Ser, Lys or Pro,

Xaa at position 12~~11~~ is Leu~~Lys~~, Ser, Thr or Ala,

Xaa at position 13~~12~~ Leu or Phe,

Xaa at position 14~~13~~ is Pro, Thr or none,

Xaa at position 15~~14~~ is Val, Leu or Asn,

Xaa at position 16~~15~~ is Pro or Leu,

Xaa at position 17 or 18~~16 or 182~~ is Ser or Cys,

Xaa at position 18 or 37~~17 or 36~~ is Pro, Thr or Ala,

Xaa at position 19~~18~~ is Pro, Arg or Ser,

Xaa at position 20~~19~~ is Pro, Val, Phe or Leu,

Xaa at position 31~~20 or 30~~ is Ser, Lys, Thr or Arg,

Xaa at position 22~~21~~ is Gly, Ser, Phe or Asn,

Xaa at position 24 or 51~~23 or 50~~ is Thr, Ala or Asn,

Xaa at position 25~~24~~ is Leu, Pro or Lys,

Xaa at position 26~~25~~ is Ser, Gly, Pro or Lys,

Xaa at position 27~~26~~ is Ser, Pro, Gln or Ala,

Xaa at position 28~~27~~ is Asn or Ala,

Xaa at position 29~~28~~ is His, Gln or Arg,

Xaa at position 30~~29~~ is Ala, Leu or Val,

Xaa at position 32~~31~~ is Pro or Thr,

Xaa at position 33~~32~~ is Leu, Ile or Ser,

Xaa at position 34~~33~~ is Ala or His,

Xaa at position 35, 50, 52, 53, 75, 196, 254, 267, 311~~34, 49, 51, 52, 74, 194, 252, 256 or 309~~ is Ala or Ser,

Xaa at position 36~~35~~ is Pro, Ser or Phe,

Xaa at position 38~~37~~ is Cys, Ala, Ser or Pro,

Xaa at position 39~~38~~ is Arg, Pro, Thr or His,

Xaa at position 40~~39~~ is Arg, Gly or none,

Xaa at position 41 or 44~~40 or 43~~ is Arg or Leu,

Xaa at position 42~~41~~ is Ser or Arg,

Xaa at position 43~~42~~ is Arg, Cys, His or Gly,

Xaa at position 45~~44~~ is Arg or Ala,

Xaa at position 46 or 255~~45 or 253~~ is Ile, Leu or Val,

Xaa at position 48~~47~~ is Ala, Val or none,

Xaa at position 49~~48~~ is Thr, Val or none,

Xaa at position 54~~53~~ is Pro, Gln or Ser,

Xaa at position 55 or 58~~54 or 57~~ is Ser, Ala or Pro,

Xaa at position 56~~55~~ is Pro, Ala or Leu,

Xaa at position 57~~56~~ is Ser, Leu or Ala,

Xaa at position 60~~59~~ is Ala, Glu or Gln,

Xaa at position 61, 229 or 340~~60, 227 or 428~~ is Ala or Thr,

Xaa at position 63~~62~~ is Thr, Ser or none,

Xaa at position 64, 193, 199, 271, 293~~63, 191, 197, 269 or 291~~ is Glu or Ala,

Xaa at position 65~~64~~ is Ala, Ser or Gly,

Xaa at position 66 is~~65 id~~ Leu or Gln,

Xaa at position 67~~66~~ is Ser, Tyr or Asn,

Xaa at position 81 or 83~~80 or 82~~ is Arg or Lys,

Xaa at position 87, 138, 156, 181, 228, 283~~86, 137, 154, 179, 226, 281~~ is Val or Ile,

Xaa at position 107~~106~~ is Arg or Asn,

Xaa at position 118, 217 or 310~~117, 215 or 308~~ is Arg or His,

Xaa at position 134~~133~~ is Leu, Gly or Gln,

Xaa at position 136 or 170~~135 or 209~~ is Val or Leu~~Lys~~,

Xaa at position 137~~136~~ is Gly or Asn,

Xaa at position 139~~138~~ is Glu or Pro,

Xaa at position 141~~139~~ is Gln or Val,

Xaa at position 144, 212 or 274~~142, 210 or 272~~ is Asp or Asn,

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Xaa at position 152~~150~~ is Leu or Asp,

Xaa at position 153 or 192~~151 or 190~~ is Thr or Asn,

Xaa at position 158~~156~~ is Glu or Ser,

Xaa at position 163 or 203~~161 or 201~~ is Gly or Arg,

Xaa at position 168~~166~~ is Asn, Glu, Thr or Gln,

Xaa at position 174~~172~~ is Asn, Lys or Arg,

Xaa at position 175~~173~~ is Ile, Leu, Lys or Pro,

Xaa at position 140, 176, 213 or 239~~174, 211 or 237~~ is Ala or Pro,

Xaa at position 179, 230 or 236~~177, 228 or 234~~ is Thr or Ser,

Xaa at position 182 or 223~~180 or 221~~ is Gly or Ser,

Xaa at position 185~~183~~ is Gly, Trp or Arg,

Xaa at position 186~~184~~ is Lys or Met,

Xaa at position 187 or 294~~185 or 292~~ is Asp or Glu,

Xaa at position 188, 232 or 298~~186, 230 or 296~~ is Gly or Ala,

Xaa at position 191, 219, 251, 261 or 263~~189, 217, 249, 259 or 261~~ is Ile or Leu,

Xaa at position 198~~196~~ is Asn, Lys or Asp,

Xaa at position 200 or 286~~198 or 284~~ is Lys or Ala,

Xaa at position 201~~199~~ is Ala, Gly or Asp,

Xaa at position 204~~202~~ is Phe or Tyr,

Xaa at position 207~~205~~ is Glu or Gly,

Xaa at position 209~~207~~ is Ser, Trp, Ala or Thr,

Xaa at position 211 is Val or Lys,

Xaa at position 214 or 222~~212 or 220~~ is Thr, Ala or Ser,

Xaa at position 21 or 218~~216~~ is Pro or Ser,

Xaa at position 221~~219~~ is Ala or Asp,

Xaa at position 247~~245~~ is Ala or Val,

Xaa at position 277~~275~~ is Gly or Asp,

Xaa at position 282~~280~~ is Val, Glu or Lys,

Xaa at position 290~~288~~ is Lys, Gln or Arg,

Xaa at position 292~~290~~ is Val or Met,

Xaa at position 296~~294~~ is Lys or Gln,

Xaa at position 306~~304~~ is Glu, Asn or Gly,

and Xaa at position 317~~405~~ is His or Ile.

Claim 7. (currently canceled)

Claim 8. (new) The polynucleotide of Claim 6 wherein:

Xaa at position 2 is Leu,

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Xaa at position 3 is Leu,

Xaa at position 4 is Thr,

Xaa at position 5 is Lys,

Xaa at position 6 is Pro,

Xaa at position 7 is Tyr,

Xaa at position 8 is Leu,

Xaa at position 9 is Ser,

Xaa at position 10 is Asn,

Xaa at position 11 is Ser,

Xaa at position 12 is Leu,

Xaa at position 13 is Leu,

Xaa at position 14 is Pro,

Xaa at position 15 is Val,

Xaa at position 16 is Pro,

Xaa at position 17 is Ser,

Xaa at position 18 is Pro,

Xaa at position 19-is Pro,

Xaa at position 20 is Pro,

Xaa at position 21 is Ser,

Xaa at position 22-is Gly,

Xaa at position 24 is Thr,

Xaa at position 25 is Leu,

Xaa at position 26 is Ser,

Xaa at position 27 is Ser,

Xaa at position 28 is Asn,

Xaa at position 29 is His,

Xaa at position 30 is Ala,

Xaa at position 31 is Ser,

Xaa at position 32 is Pro,

Xaa at position 33 is Leu,

Xaa at position 34 is Ala,

Xaa at position 35 is Ala,

Xaa at position 36 is Pro,

Xaa at position 37 is Thr,

Xaa at position 38 is Cys,

Xaa at position 39 is Arg,

Xaa at position 40 is none,

Xaa at position 41 is Arg,

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Xaa at position 42 is Ser,

Xaa at position 43 is Arg,

Xaa at position 44 is Leu,

Xaa at position 45 is Arg,

Xaa at position 46 is Ile,

Xaa at position 47 is Ser,

Xaa at position 48 is Ala,

Xaa at position 49 is Thr,

Xaa at position 50 is Ser,

Xaa at position 51 is Thr,

Xaa at position 52 is Ala,

Xaa at position 53 is Ala,

Xaa at position 54 is Pro,

Xaa at position 55 is Ser,

Xaa at position 56 is Pro,

Xaa at position 57 is Ser

Xaa at position 58 is Ser,

Xaa at position 60 is Ala,

Xaa at position 61 is Ala,

Xaa at position 63 is Thr,

Xaa at position 64 is Ala,

Xaa at position 65 is Ser,

Xaa at position 66 is Leu,

Xaa at position 67 is Ser,

Xaa at position 75 is Ala,

Xaa at position 81 is Arg,

Xaa at position 83 is Lys,

Xaa at position 87 is Val,

Xaa at position 107 is Arg,

Xaa at position 118 is Arg,

Xaa at position 134 is Leu,

Xaa at position 136 is Val,

Xaa at position 137 is Gly,

Xaa at position 138 is Val,

Xaa at position 139 is Glu,

Xaa at position 140 is Pro,

Xaa at position 141 is Gln,

Xaa at position 144 is Asp,

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Xaa at position 152 is Leu,

Xaa at position 153 is Thr,

Xaa at position 156 is Val,

Xaa at position 158 is Glu,

Xaa at position 163 is Gly,

Xaa at position 168 is Asn,

Xaa at position 170 is Val,

Xaa at position 174 is Asn,

Xaa at position 175 is Ile,

Xaa at position 176 is Ala,

Xaa at position 178 is Gly,

Xaa at position 179 is Thr,

Xaa at position 181 is Ile,

Xaa at position 182 is Gly,

Xaa at position 184-is Cys,

Xaa at position 185 is Gly,

Xaa at position 186 is Lys,

Xaa at position 187 is Asp,

Xaa at position 188 is Ala,

Xaa at position 191 is Ile,

Xaa at position 192 is Thr,

Xaa at position 193 is Ala,

Xaa at position 196 is Ser,

Xaa at position 198 is Asn,

Xaa at position 199 is Ala,

Xaa at position 200 is Ala,

Xaa at position 201 is Ala,

Xaa at position 203 is Gly,

Xaa at position 204 is Phe,

Xaa at position 207 is Glu,

Xaa at position 209 is Ser,

Xaa at position 211 is Val,

Xaa at position 212 is Asp,

Xaa at position 213 is Ala,

Xaa at position 214 is Thr,

Xaa at position 217 is His,

Xaa at position 218 is Pro,

Xaa at position 219 is Ile,

Xaa at position 221 is Ala,

Xaa at position 222 is Ala,

Xaa at position 223 is Gly,

Xaa at position 228 is Ile,

Xaa at position 229 is Ala,

Xaa at position 230 is Thr,

Xaa at position 232 is Ala,

Xaa at position 236 is Thr,

Xaa at position 239 is Ala,

Xaa at position 247 is Ala,

Xaa at position 251 is Ile,

Xaa at position 254 is Ala,

Xaa at position 255 is Val,

Xaa at position 261 is Leu,

Xaa at position 263 is Leu,

Xaa at position 267 is Ser,

Xaa at position 271 is Ala,

Xaa at position 274 is Asn,

Xaa at position 277 is Gly,

Xaa at position 282 is Val,

Xaa at position 283 is Val,

Xaa at position 286 is Ala,

Xaa at position 290 is Lys,

Xaa at position 292 is Val,

Xaa at position 293 is Ala,

Xaa at position 294 is Asp,

Xaa at position 296 is Lys,

Xaa at position 298 is Ala,

Xaa at position 306 is Glu,

Xaa at position 310 is His,

Xaa at position 311 is Ala,

Xaa at position 317 is His, and

Xaa at position 340 is Thr.

Claim 9. (new) The polynucleotide of Claim 6 wherein:

Xaa at position 2 is Leu,

Xaa at position 3 is Leu,

Xaa at position 4 is Ala,

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Xaa at position 5 is Lys,

Xaa at position 6 is Pro,

Xaa at position 7 is His,

Xaa at position 8 is Leu,

Xaa at position 9 is Ser,

Xaa at position 10 is Ser,

Xaa at position 11 is Ser,

Xaa at position 12 is Ser,

Xaa at position 13 Phe,

Xaa at position 14 is none,

Xaa at position 15 is Leu,

Xaa at position 16 is Pro,

Xaa at position 17 is Ser,

Xaa at position 18 is Thr,

Xaa at position 19-is Arg,

Xaa at position 20 is Val,

Xaa at position 21 is Ser,

Xaa at position 22 is Ser,

Xaa at position 24 is Ala,

Xaa at position 25 is Pro,

Xaa at position 26 is Gly,

Xaa at position 27 is Pro,

Xaa at position 28 is Asn,

Xaa at position 29 is His,

Xaa at position 30 is Ala,

Xaa at position 31 is Lys,

Xaa at position 32 is Pro,

Xaa at position 33 is Ile,

Xaa at position 34 is Ala,

Xaa at position 35 is Ala,

Xaa at position 36 is Ser,

Xaa at position 37 is Pro,

Xaa at position 38 is Ala,

Xaa at position 39 is Pro,

Xaa at position 40 is none,

Xaa at position 41 is Arg,

Xaa at position 42 is Arg,

Xaa at position 43 is Cys,

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Xaa at position 44 is Leu,
Xaa at position 45 is Arg,
Xaa at position 46 is Leu,
Xaa at position 47 is Ala,
Xaa at position 48 is Val,
Xaa at position 49 is Thr,
Xaa at position 50 is Ser,
Xaa at position 51 is Ala,
Xaa at position 52 is Ala,
Xaa at position 53 is Ala,
Xaa at position 54 is Pro,
Xaa at position 55 is Ala,
Xaa at position 56 is Ala,
Xaa at position 57 is Ser,
Xaa at position 58 is Ser,
Xaa at position 60 is Glu,
Xaa at position 61 is Ala,
Xaa at position 63 is none,
Xaa at position 64 is Ala,
Xaa at position 65 is Ala,
Xaa at position 66 is Leu,
Xaa at position 67 is Ser,
Xaa at position 75 is Ala,
Xaa at position 81 is Arg,
Xaa at position 83 is Lys,
Xaa at position 87 is Val,
Xaa at position 107 is Arg,
Xaa at position 118 is His,
Xaa at position 134 is Leu,
Xaa at position 136 is Val,
Xaa at position 137 is Gly,
Xaa at position 138 is Val,
Xaa at position 139 is Glu,
Xaa at position 140 is Pro,
Xaa at position 141 is Gln,
Xaa at position 144 is Asn,
Xaa at position 152 is Leu,
Xaa at position 153 is Asn,

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Xaa at position 156 is Val,

Xaa at position 158 is Glu,

Xaa at position 163 is Arg,

Xaa at position 168 is Glu,

Xaa at position 170 is Leu,

Xaa at position 174 is Lys,

Xaa at position 175 is Leu,

Xaa at position 176 is Pro,

Xaa at position 178 is Gly,

Xaa at position 179 is Ser,

Xaa at position 181 is Val,

Xaa at position 182 is Ser,

Xaa at position 184 is Cys,

Xaa at position 185 is Trp,

Xaa at position 186 is Lys,

Xaa at position 187 is Glu,

Xaa at position 188 is Ala,

Xaa at position 191 is Leu,

Xaa at position 192 is Asn,

Xaa at position 193 is Glu,

Xaa at position 196 is Ser,

Xaa at position 198 is Asn, Lys or Asp,

Xaa at position 199 is Glu,

Xaa at position 200 is Lys,

Xaa at position 201 is Gly,

Xaa at position 203 is Arg,

Xaa at position 204 is Phe,

Xaa at position 207 is Gly,

Xaa at position 209 is Trp,

Xaa at position 211 is Val,

Xaa at position 212 is Asp,

Xaa at position 213 is Ala,

Xaa at position 214 is Thr,

Xaa at position 217 is His,

Xaa at position 218 is Pro,

Xaa at position 219 is Ile,

Xaa at position 221 is Ala,

Xaa at position 222 is Ala,

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Xaa at position 223 is Gly,

Xaa at position 228 is Ile,

Xaa at position 229 is Ala,

Xaa at position 230 is Thr,

Xaa at position 232 is Gly,

Xaa at position 236 is Thr

Xaa at position 239 is Ala,

Xaa at position 247 is Ala,

Xaa at position 251 is Ile,

Xaa at position 254 is Ala,

Xaa at position 255 is Val,

Xaa at position 261 is Leu,

Xaa at position 263 is Leu,

Xaa at position 267 is Ser,

Xaa at position 271 is Ala,

Xaa at position 274 is Asn,

Xaa at position 277 is Gly,

Xaa at position 282 is Glu,

Xaa at position 283 is Ile,

Xaa at position 286 is Ala,

Xaa at position 290 is Gln,

Xaa at position 292 is Val,

Xaa at position 293 is Ala,

Xaa at position 294 is Asp,

Xaa at position 296 is Gln,

Xaa at position 298 is Ala,

Xaa at position 306 is Glu,

Xaa at position 310 is Arg,

Xaa at position 311 is Ala,

Xaa at position 317 is His, and

Xaa at position 340 is Thr.

Claim 10. (new) The polynucleotide of Claim 6 wherein:

Xaa at position 2 is Met,

Xaa at position 3 is Ala,

Xaa at position 4 is Gly,

Xaa at position 5 is none,

Xaa at position 6 is none,

Xaa at position 7 is none,
Xaa at position 8 is none,
Xaa at position 9 is Ala,
Xaa at position 10 is Ala,
Xaa at position 11 is Lys,
Xaa at position 12 is Thr,
Xaa at position 13n is Leu,
Xaa at position 14 is Thr,
Xaa at position 15 is Asn,
Xaa at position 16 is Leu,
Xaa at position 17 is Cys,
Xaa at position 18 is Pro,
Xaa at position 19-is Ser,
Xaa at position 20 is Phe,
Xaa at position 21 is Pro,
Xaa at position 22 is Phe,
Xaa at position 24 is Thr,
Xaa at position 25 is Lys,
Xaa at position 26 is Pro,
Xaa at position 27 is Pro,
Xaa at position 28 is Asn,
Xaa at position 29 is Gln,
Xaa at position 30 is Leu,
Xaa at position 31 is Thr,
Xaa at position 32 is Thr,
Xaa at position 33 is Ser,
Xaa at position 34 is His,
Xaa at position 35 is Ala,
Xaa at position 36 is Phe,
Xaa at position 37 is Pro,
Xaa at position 38 is Ser,
Xaa at position 39 is Thr,
Xaa at position 40 is Arg,
Xaa at position 41 is Leu,
Xaa at position 42 is Arg,
Xaa at position 43 is His,
Xaa at position 44 is Arg,
Xaa at position 45 is Ala,

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Xaa at position 46 is Ile,

Xaa at position 47 is Ser,

Xaa at position 48 is Ala,

Xaa at position 49 is Val,

Xaa at position 50 is Ala,

Xaa at position 51 is Asn,

Xaa at position 52 is Ala,

Xaa at position 53 is Ala,

Xaa at position 54 is Gln,

Xaa at position 55 is Pro,

Xaa at position 56 is Pro,

Xaa at position 57 is Leu,

Xaa at position 58 is Ala,

Xaa at position 60 is Ala,

Xaa at position 61 is Thr,

Xaa at position 63 is Thr,

Xaa at position 64 is Glu,

Xaa at position 65 is Gly,

Xaa at position 66 is Gln,

Xaa at position 67 is Tyr,

Xaa at position 75 is Ser,

Xaa at position 81 is Lys,

Xaa at position 83 is Arg,

Xaa at position 87 is Ile,

Xaa at position 107 is Asn,

Xaa at position 118 is Arg,

Xaa at position 134 is Gly,

Xaa at position 136 is Leu,

Xaa at position 137 is Asn,

Xaa at position 138 is Ile,

Xaa at position 139 is Pro,

Xaa at position 140 is Ala,

Xaa at position 141 is Val,

Xaa at position 144 is Asp,

Xaa at position 152 is Asp,

Xaa at position 153 is Thr,

Xaa at position 156 is Ile,

Xaa at position 158 is Ser,

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Xaa at position 163 is Gly,

Xaa at position 168 is Thr,

Xaa at position 170 is Val,

Xaa at position 174 is Asn,

Xaa at position 175 is Lys,

Xaa at position 176 is Ala,

Xaa at position 178 is Ala,

Xaa at position 179 is Thr,

Xaa at position 181 is Val,

Xaa at position 182 is Gly,

Xaa at position 184-is Ser,

Xaa at position 185 is Gly,

Xaa at position 186 is Met,

Xaa at position 187 is Asp,

Xaa at position 188 is Gly,

Xaa at position 191 is Leu,

Xaa at position 192 is Thr,

Xaa at position 193 is Ala,

Xaa at position 196 is Ala,

Xaa at position 198 is Lys,

Xaa at position 199 is Ala,

Xaa at position 200 is Ala,

Xaa at position 201 is Asp,

Xaa at position 203 is Gly,

Xaa at position 204 is Tyr,

Xaa at position 207 is Glu,

Xaa at position 209 is Ala,

Xaa at position 211 is Val,

Xaa at position 212 is Asp,

Xaa at position 213 is Pro,

Xaa at position 214 is Ala,

Xaa at position 217 is Arg,

Xaa at position 218 is Ser,

Xaa at position 219 is Leu,

Xaa at position 221 is Asp,

Xaa at position 222 is Thr,

Xaa at position 223 is Ser,

Xaa at position 228 is Val,

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Xaa at position 229 is Thr,

Xaa at position 230 is Ser,

Xaa at position 232 is Ala,

Xaa at position 236 is Ser,

Xaa at position 239 is Pro,

Xaa at position 247 is Val,

Xaa at position 251 is Leu,

Xaa at position 254 is Ser,

Xaa at position 255 is Leu,

Xaa at position 261 is Ile,

Xaa at position 263 is Leu,

Xaa at position 267 is Ala,

Xaa at position 271 is Glu,

Xaa at position 274 is Asn,

Xaa at position 277 is Asp,

Xaa at position 282 is Lys,

Xaa at position 283 is Ile,

Xaa at position 286 is Lys,

Xaa at position 290 is Lys,

Xaa at position 292 is Met,

Xaa at position 293 is Glu,

Xaa at position 294 is Asp,

Xaa at position 296 is Lys,

Xaa at position 298 is Gly,

Xaa at position 306 is Asn,

Xaa at position 310 is Arg,

Xaa at position 311 is Ser,

Xaa at position 317 is Ile, and

Xaa at position 340 is Ala.

Claim 11. (new) The polynucleotide of Claim 6 wherein:

Xaa at position 2 is Leu,

Xaa at position 3 is Leu,

Xaa at position 4 is Thr,

Xaa at position 5 is Lys,

Xaa at position 6 is Pro,

Xaa at position 7 is His,

Xaa at position 8 is none,

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Xaa at position 9 is none,

Xaa at position 10 is none,

Xaa at position 11 is Pro,

Xaa at position 12 is Ala,

Xaa at position 13 is Leu,

Xaa at position 14 is Thr,

Xaa at position 15 is Leu,

Xaa at position 16 is Pro,

Xaa at position 17 is Ser,

Xaa at position 18 is Ala,

Xaa at position 19 is Ser,

Xaa at position 20 is Leu,

Xaa at position 21 is Pro,

Xaa at position 22 is Phe,

Xaa at position 24 is Asn,

Xaa at position 25 is Leu,

Xaa at position 26 is Lys,

Xaa at position 27 is Ala,

Xaa at position 28 is Ala,

Xaa at position 29 is Arg,

Xaa at position 30 is Val,

Xaa at position 31 is Arg,

Xaa at position 32 is Pro,

Xaa at position 33 is Leu,

Xaa at position 34 is Ala,

Xaa at position 35 is Ser,

Xaa at position 36 is Ser,

Xaa at position 37 is Ala,

Xaa at position 38 is Pro,

Xaa at position 39 is His,

Xaa at position 40 is Gly,

Xaa at position 41 is Arg,

Xaa at position 42 is Arg,

Xaa at position 43 is Gly,

Xaa at position 44 is Leu,

Xaa at position 45 is Arg,

Xaa at position 46 is Val,

Xaa at position 47 is none,

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Xaa at position 48 is none,

Xaa at position 49 is none,

Xaa at position 50 is Ser,

Xaa at position 51 is Ala,

Xaa at position 52 is Ser,

Xaa at position 53 is Ser,

Xaa at position 54 is Ser,

Xaa at position 55 is Ser,

Xaa at position 56 is Leu,

Xaa at position 57 is Ala,

Xaa at position 58 is Pro,

Xaa at position 60 is Gln,

Xaa at position 61 is Ala,

Xaa at position 63 is Ser,

Xaa at position 64 is Ala,

Xaa at position 65 is Ala,

Xaa at position 66 is Leu,

Xaa at position 67 is Asn,

Xaa at position 75 is Ser,

Xaa at position 81 is Lys,

Xaa at position 83 is Arg,

Xaa at position 87 is Ile,

Xaa at position 107 is Arg,

Xaa at position 118 is Arg,

Xaa at position 134 is Gln,

Xaa at position 136 is Val,

Xaa at position 137 is Gly,

Xaa at position 138 is Val,

Xaa at position 139 is Glu or Pro,

Xaa at position 140 is Pro,

Xaa at position 141 is Gln,

Xaa at position 144 is Asn,

Xaa at position 152 is Leu or Asp,

Xaa at position 153 is Thr or Asn,

Xaa at position 156 is Val or Ile,

Xaa at position 158 is Glu or Ser,

Xaa at position 163 is Gly or Arg,

Xaa at position 168 is Gln,

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Xaa at position 170 is Leu,

Xaa at position 174 is Arg,

Xaa at position 175 is Pro,

Xaa at position 176 is Ala,

Xaa at position 178 is Thr,

Xaa at position 179 is Thr,

Xaa at position 181 is Val,

Xaa at position 182 is Gly,

Xaa at position 184 is Cys,

Xaa at position 185 is Arg,

Xaa at position 186 is Lys,

Xaa at position 187 is Asp,

Xaa at position 188 is Gly,

Position 190 is Ile,

Xaa at position 191 is Leu,

Xaa at position 192 is Thr,

Xaa at position 193 is Glu,

Xaa at position 196 is Ser,

Xaa at position 198 is Asp,

Xaa at position 199 is Ala,

Xaa at position 200 is Ala,

Xaa at position 201 is Ala,

Xaa at position 203 is Gly,

Xaa at position 204 is Phe,

Xaa at position 207 is Glu,

Xaa at position 209 is Thr,

Xaa at position 211 is Lys,

Xaa at position 212 is Asn,

Xaa at position 213 is Pro,

Xaa at position 214 is Ser,

Xaa at position 217 is His,

Xaa at position 218 is Pro,

Xaa at position 219 is Ile,

Xaa at position 221 is Ala,

Xaa at position 222 is Ser,

Xaa at position 223 is Ser,

Xaa at position 228 is Ile,

Xaa at position 229 is Ala,

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Xaa at position 230 is Thr,

Xaa at position 232 is Ala,

Xaa at position 236 is Thr,

Xaa at position 239 is Ala,

Xaa at position 247 is Ala,

Xaa at position 251 is Ile,

Xaa at position 254 is Ala,

Xaa at position 255 is Ile,

Xaa at position 261 is Leu,

Xaa at position 263 is Ile,

Xaa at position 267 is Ser,

Xaa at position 271 is Ala,

Xaa at position 274 is Asp,

Xaa at position 277 is Gly,

Xaa at position 282 is Glu,

Xaa at position 283 is Ile,

Xaa at position 286 is Ala,

Xaa at position 290 is Arg,

Xaa at position 292 is Val,

Xaa at position 293 is Ala,

Xaa at position 294 is Glu,

Xaa at position 296 is Lys,

Xaa at position 298 is Gly,

Xaa at position 306 is Gly,

Xaa at position 310 is Arg,

Xaa at position 311 is Ala,

Xaa at position 317 is His, and

Xaa at position 340 is Thr.